T18D10 – I.D. of an Unknown Acid Design and DCP

You have been given an unknown concentration of an unknown common acid or base. Develop a set of procedures that will allow you to identify the compound in solution and its concentration based on its chemical properties using (but not limited to) the materials provided. *You may have several sets of variables, each investigating a different property of the compound.*

Unknown compounds:

HCl (hydrochloric acid)	HNO_3 (nitric acid)
H_2SO_4 (sulfuric acid)	H_3PO_4 (phosphoric acid)
CH_3COOH (ethanoic acid)	H_3BO_3 (boric acid)
NaOH (sodium hydroxide)	KOH (potassium hydroxide)
NH_3 (ammonia)	$Ca(OH)_2$ (calcium hydroxide)
$H_2C_2O_4$ (oxalic acid)	$H_2C_3H_2O_4$ (malonic acid)
$H_2C_4H_2O_4$ (maleic acid)	$H_2C_4H_4O_6$ (tartaric acid)

Materials (if you would like others, please request):

- Goggles
- Lab apron/coat
- 1.0 M HCl
- 1.0 M NaOH
- pH strips
- litmus paper
- universal indicator
- phenolphalein indicator
- methyl red indicator
- methyl orange indicator
- bromophenol blue indicator
- bromothymol blue indicator
- DI water
- Glass funnel
- Computer and Excel
- Earlenmeyer flask
- Beakers
- Glass stirring rod
- Buret
- Ring stand
- Buret Clamp
- Stir Plate & Magnet
- Volumetric Pipet
- Plastic Pipet
- Graduated Cylinder
- pH probe
- Conductivity Probe
- Temperature Probe
- Vernier Software and Logger Pro